bigger a business becomes, the nearer its system of business and its relation to its staff approximate to Civil Service conditions—boards of directors do not differ essentially from Government Ministries, Boards, Offices, or whatever their title may be, except in the extent and bulk of the business controlled.

The book is certainly full of thought and of detailed information, and is good reading, inasmuch as it helps us to understand what important things we have left undone that we ought to have done. It is not too late to do them now.

A. J. S.

THE ART OF TRAVEL.

Handbook of Travel. Prepared by the Harvard Travellers' Club. Pp. 544. (Cambridge, Mass.: Harvard University Press, 1917.) Price 2.50 dollars.

THIS volume has been prepared by various members of the Harvard Travellers' Club in the hope of promoting intelligent travel and observation. Mr. G. M. Allen is the editor, while Prof. W. M. Davis seems to have been mainly responsible for the choice of authors. Books of this nature written by experts are not numerous, and though they appeal more to strenuous tourists than to serious travellers, they nevertheless have their uses, particularly in more technical matters. Observation is an attribute of most boys, but in later life it is hard to teach. American schooling probably does more than our own to develop it, but the Boy Scout movement, in its best phases, is its great nursery. The next generation of travellers may well prove more observant and not less resourceful than the last.

The first chapter, by Mr. W. B. Cabot, on "Camp and Travel in the North Country," is a fascinating account of woodlore and scoutcraft on the edge of civilisation, despite the author's irritating and ungraceful style. Chapters on tropical and arctic travel are useful and trustworthy guides. In the latter the pyramid-shaped tent, 6 ft. high, should be mentioned. The cover is supported by four bamboos meeting at the summit in aluminium sockets. The opening is a funnel, in the middle of one side, lashed after exit or entrance to exclude drift. The tent has the advantages of being light and of resisting any wind. During a blizzard it snows up and so is protected from both wind and snow. There are useful chapters on medicine and surgery and on determining positions. Dr. Hamilton Rice adds some notes on traverse surveys in South America. Among the other papers may be mentioned a very clear and instructive one on meteorology by Prof. R. DeC. Ward, and some condensed notes on geographical and geological observation by Prof. W. M. Davis. Prof. Davis describes the necessary mental equipment of a traveller as a moderate fund of geographical knowledge, an appropriate terminology, and a desire to do good work. This he thinks is sufficient for an empirical record of plainly visible facts. He does well to insist that care should be taken not to give a wrong impression by the use of inappropriate adjectives and of unnecessary superlatives. Florid language mars many records of travel.

The notes on natural history deal mainly with vertebrates and insects. More attention might well be paid to other invertebrates, since their collection is often neglected. It would be well to emphasise that fish are best preserved by fixing in formalin, and subsequent changes in graded strengths of spirit. A chapter on map-reading might be added. Elementary as such instruction may seem, it would prove useful, for few people, even if in the habit of consulting maps, are able to make full use of them. Cartography is not self-obvious, and, like other forms of notation, must be learnt. Some notes on scales and projections should certainly find a place in the book.

The volume has a compact, handy form which certainly enhances its usefulness. Most chapters have short bibliographies, some of which might with advantage be extended.

R. N. R. B.

OUR BOOKSHELF.

War Nursing. What Every Women Should Know. Red Cross Lectures. By Prof. C. Richet. Translated by Helen de Vere Beauclerk. Pp. xi+119. (London: William Heinemann, 1918.) Price 3*s.* 6*d.* net.

IT may be desirable that the nurse should have the scientific grounding outlined in this book, but to term it "War Nursing" is entirely a misnomer, for of the subject of nursing proper the book contains little.

Commencing with an introduction on the line of conduct of the nurse, the first chapter deals with antisepsis. The microbial basis of sepsis is discussed, and brief remarks are offered on the ideal antiseptic and on the antiseptic substances commonly in use. Anæsthesia is then considered from the physiological point of view, but no hints are given on the practical administration of anæsthetics. It is difficult to understand why this subject is included; either the nurse will not administer anæsthetics when it is unnecessary, or, if she does, practical details should have been given. The third chapter deals with foods—questions of calories and nutritive values—but, again, no details are given for feeding the sick.

Hæmorrhage is next considered, likewise with a similar lack of any practical instruction how to deal with an emergency hæmorrhage. In the two concluding chapters the subjects of fever and asphyxia are dealt with mainly from the physiological point of view, but why the last named should be included in a popular manual is difficult to understand.

A table of quantities—the carbohydrate and nitrogenous contents of foodstuffs and strengths of antiseptic solutions—occupies the last page. Here mistakes occur, *e.g.* solutions of carbolic acid 3 per 1000, and of boric acid 7½ per 1000, are far too weak for practical use.

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The book is really an introduction to medical physiology, and might be of service to one who desires to become a professional nurse, but is quite unsuited to the requirements of the "V.A.D." or emergency nurse. R. T. H.

The Student's Handbook of the University and Colleges of Cambridge. Seventeenth edition. Pp. vii+717. (Cambridge: At the University Press, 1918.) Price 6*s.* net.

THERE are three important additions to the present issue of this very useful handbook. First, the regulations for the new diploma in Oriental languages; secondly, the new regulations for the Classical Tripos and the Oriental Languages Tripos; and thirdly, the regulations for the newly established Nita King research scholarship to encourage research in the etiology, pathology, and prevention of fevers.

An account is also given of the new Parliamentary franchise for the University established by the Act of this year. The war has, of course, occasioned temporary emergency legislation on the part of the University authorities, and the various enactments are duly summarised.

Parents and intending students will find here all the information they seek concerning the University and the different colleges.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

The Late Mr. R. P. Gregory.

IN supplement to Prof. Seward's sympathetic notice of the late Mr. R. P. Gregory in NATURE of November 28, I venture to add a few words as to the peculiar interest of his genetic work. Mr. Gregory was at first associated with me in the proof that the familiar heterostylism of Primulas is an allelomorphic phenomenon. He next undertook a laborious inquiry into the sex-polymorphism of *Valeriana dioica*, but, in spite of much experiment, the case proved intractable, and little positive result was reached. About this time he declined a lucrative post which would have, as he feared, meant the practical abandonment of research, and, undeterred by a rather disappointing experience, he attacked several problems met with in the genetics of *Primula sinensis*, to which he devoted his spare energies for many years. Mr. Gregory there encountered a group of facts of surprising novelty and importance, which were described in outline in Proc. Roy. Soc., 1914, vol. lxxxvii.B, p. 484. Certain plants known in horticulture as "giants" have all their organs of very large size, and two races of these are, as he proved cytologically, tetraploid, containing four times (forty-eight) the haploid number (twelve) of normal plants. Breeding from such plants, he found that they are actually endowed with four sets of Mendelian factors instead of the usual two sets proper to biparental inheritance. Various paradoxical consequences were, therefore, theoretically possible, and several of these, as he demonstrated, do occur.

Such tetraploid plants are known to have arisen *de novo* on two separate occasions (once in his own work and once at Messrs. Sutton's, to whom he was indebted for many facilities) from diploid parents, but, as Mr. Gregory discovered, they were incapable of breeding with the races from which they were derived—a fact hitherto unparalleled and indubitably of great significance. When war broke out he became involved in military duties, eventually going out to France and being rather badly gassed. For technical reasons the study of the "giants" had to be suspended, but he kept always in touch with the Primula work, which we maintained for him so far as possible. The purpose of the later experiments was to test the theory that the numerous linkages are indications of successive somatic segregations, a view to which he strongly inclined in preference to current interpretations based on cytological appearances, and he believed that support for the somatic theory was already in some measure provided by his own observations. He left a mass of records bearing on this question, which we hope eventually to publish, but the character and soundness of his work even in its imperfect state give it classical value. W. BATESON.

The John Innes Horticultural Institution,
Merton, S.W.19.

Cyclonic Circulation.

IN consideration of the theoretical or "gradient" wind associated with any system of isobars where the curvature of the path is taken into account, a point of some interest appears to have been generally overlooked in the past. In the steady state the equation connecting V, the velocity of the gradient wind, with γ, the pressure gradient, is $\gamma/D = 2\omega V \sin\phi \pm V^2 \cot\rho/R$, where D = density of the air, ω = angular velocity of the earth, ϕ = latitude, R = radius of the earth, and ρ = angular radius of the small circle which forms the path of the air at the time.

The positive or negative sign is to be taken according as the path is concave or convex to the low-pressure area. For any given pressure gradient and curvature of path there will be two roots for V from this equation—that is, two different velocities, real or imaginary, will satisfy the dynamical conditions. The interesting case where the roots are imaginary has been dealt with by Gold in his discussion of this question some years ago (Meteorological Office, Official Publication No. 190, 1908). In the ordinary cyclones and anticyclones with which we are familiar V has the value given by the smaller numerically of the two real roots, and the conditions pertaining to the larger root seem to have escaped attention.

To take a numerical example, let $\rho = 3°$ and $\phi = 55°$; then, adopting the normal value for the density D, the equation becomes $\pm V^2 + 40{\cdot}7.V - 275\gamma = 0$ after conversion to the units m./sec. for velocity and mb. per 100 km. for pressure gradient. To deal first with the case of curvature convex to the "low," where the negative sign must be taken; putting $\gamma = 1$ mb. per 100 km., the two roots for V become 9 and 31 m./sec. Both roots have the same sign, and correspond with clockwise rotation in the northern hemisphere. In this case (anticyclonic motion) the larger of the two roots does not seem to represent a stable state, and any perturbation would lead to a modification of the whole pressure distribution. This value is not, therefore, of practical interest. The lower value, 9 m./sec., is that which is met with in practice.

In the case of a path concave to the "low," the two roots for V are of opposite sign. The values corresponding with the above pressure gradient are $V = 6$ and -46—that is, $V = 6$ m./sec. for normal counter-clockwise rotation, and $V = 46$ m./sec. for rotation in the opposite direction, *i.e.* clockwise in the

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